Claim 51 (new) The method of claim 50, wherein the gas means is a particle gun.

Claim 52 (new) The method of claim 46, wherein the particle is a metal particle.

Claim 53 (new) The method of claim 52, wherein the metal particle is selected from the group consisting of ferrite crystals, gold and tungsten.

Claim 54 (new) The method of claim 46, wherein the population of cells is part of a tissue.

Claim 55 (new) The method of claim 54, wherein the tissue is selected from the group consisting of tumor tissue, epidermal tissue, muscle tissue, bone marrow tissue, neural tissue, brain tissue, organ tissue, and human biopsy tissue.

Claim 56 (new) The method of claim 46 wherein the stained cell is a living or a fixed cell.

Claim 57 (new) The method of claim 56, wherein the stained cell is a living cell and said cell is imaged within about one minute of the coated particle being propelled at the cell.

Claim 58 (new) The method of claim 56, wherein the stained cell is a fixed cell and said cell is imaged within less than about five minutes to about thirty minutes of the coated particle being propelled at the cell.

Claim 59 (new) The method of claim 54, wherein the coated particle is propelled 50-100 μm into the tissue to contact the membrane of the cell.

Claim 60 (new) The method of claim 59, wherein the coated particle is propelled about 50-70 μm into the tissue.

Claim 61 (new) The method of claim 46, wherein the cell is a neuron.

Claim 62 (new) The method of claim 61, wherein the particle contacts an axon.

Claim 63 (new) The method of claim 61, wherein the particle does not contact the cell body.

Claim 64 (new) A method for individually labeling cells within a population of cells whereby the cells are differentially labeled relative to neighboring cells within the population, the method comprising propelling a plurality of particles coated with a lipophilic hydrophobic dye at the population of cells to cause the particles to contact the membranes of the cells, and allowing the dye to diffuse into the cell membranes and thereby differentially label the cells relative to neighboring cells within the population.

Claim 65 (new) The method of claim 64, wherein the particles are coated with more than one lipophilic hydrophobic dye.

Claim 66 (new) The method of claim 65, wherein each lipophilic hydrophobic dye has an emission profile that is distinct from each of the other lipophilic hydrophobic dyes.

Claim 67 (new) The method of claim 64, wherein the dye is a fluorescent dye.

Claim 68 (new) The method of claim 64, wherein the fluorescent dye is a carbocyanine dye.

Claim 69 (new) The method of claim 68, wherein the carbocyanine dye is selected from the group consisting of DiO, DiI, DiD, and any combination thereof.

Claim 70 (new) The method of claim 64, wherein the plurality of particles is contained in at least one macroprojectile.

Claim 71 (new) The method of claim 64, further comprising causing the macroprojectile to contact a macroprojectile stopping means before contacting the cells, the macroprojectile stopping means being capable of stopping the macroprojectile while allowing at least one particle to continue toward the target cell.

Claim 72 (new) The method of claim 71, wherein the macroprojectile stopping means is a filter.

Claim 73 (new) The method of claim 72, wherein the filter has a pore size of between about 1 and about 8 μm.

Claim 74 (new) The method of claim 64, wherein the propelling is by a gas means.

Claim 75 (new) The method of claim 74, wherein the gas means is a particle gun.

Claim 76 (new) The method of claim 64, wherein the particles are metal particles.

Claim 77 (new) The method of claim 76, wherein the metal particles are selected from the group consisting of ferrite crystals, gold and tungsten.

Claim 78 (new) The method of claim 64, wherein the population of cells is part of a tissue.

Claim 79 (new) The method of claim 78, wherein the tissue is selected from the group consisting of tumor tissue, epidermal tissue, muscle tissue, bone marrow tissue, neural tissue, brain tissue, organ tissue, and human biopsy tissue.

Claim 80 (new) The method of claim 64 wherein the stained cells are living or fixed cells.

Claim 81 (new) The method of claim 80, wherein the stained cells are living cells and said cells are imaged within about one minute of the coated particles being propelled at the cells.

Claim 82 (new) The method of claim 80, wherein the stained cells are fixed cells and said cells are imaged within less than

about five minutes to about thirty minutes of the coated particles being propelled at the cells.

Claim 83 (new) The method of claim 78, wherein the coated particles are propelled 50-100 μm into the tissue to contact the membranes of the cells.

Claim 84 (new) The method of claim 83, wherein the coated particles are propelled about 50-70 μm into the tissue.

Claim 85 (new) The method of claim 64, wherein the cell is a neuron.

Claim 86 (new) The method of claim 85, wherein the particle contacts an axon.

Claim 87 (new) The method of claim 85, wherein the particle does not contact the cell body.

Claim 88 (new) A method for individually labeling cells within a population of cells whereby the cells are differentially labeled relative to neighboring cells within the population, the method comprising propelling a plurality of particles containing a plurality of nucleotide sequences encoding fluorescent proteins having different emission spectra at the population of cells to cause the particles to enter the cells, and allowing expression of the proteins encoded by the nucleotide sequences to occur and thereby differentially label the cells relative to neighboring cells within the population.

Claim 89 (new) The method of claim 88, wherein the fluorescent proteins with different emission spectra are red fluorescent protein, green fluorescent protein or variants of green fluorescent protein.

Claim 90 (new) The method of claim 88, wherein the propelling is by a gas means.

Claim 91 (new) The method of claim 90, wherein the gas means is a particle gun.

Claim 92 (new) The method of claim 88, wherein the particles are metal particle.

Claim 93 (new) The method of claim 92, wherein the metal particles are selected from the group consisting of ferrite crystals, gold and tungsten.

Claim 94 (new) The method of claim 88, wherein the population of cells is part of a tissue.

Claim 95 (new) The method of claim 94, wherein the tissue is selected from the group consisting of tumor tissue, epidermal tissue, muscle tissue, bone marrow tissue, neural tissue, brain tissue, organ tissue, and human biopsy tissue.

Claim 96 (new) The method of claim 94, wherein the coated particles are propelled 50-100 μm into the tissue to enter the cells.

Claim 97 (new) The method of claim 96, wherein the coated particles are propelled about 50-70 μm into the tissue.